

REMARKS

This paper is submitted in response to the Office Action mailed on May 1, 2006. Claims 1, 15, 18 and 25 have been amended and claims 29-39 have been canceled. Claims 1-18 now remain in the application. In view of the foregoing amendments, as well as the following remarks, Applicants respectfully submit that this application is in complete condition for allowance and requests reconsideration of the application in this regard.

The application was originally filed with 39 claims and was subject to a restriction requirement. In response to the restriction requirement, Applicants elected Group I, identified by the Examiner as being represented by claims 1-28. The non-elected claims 29-39 have been canceled herein without prejudice to the filing of one or more divisional applications.

In regard to the amendments to the specification, a number of typographical errors were discovered during the preparation of this Response. The typographical errors have been corrected herein. No new matter is being introduced by these amendments to the specification.

Claims 18 and 25-28 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Examiner asserts that the scope of the phrase "approximately 8" in the context of the claims is not clear. Claim 18 and independent claim 25 have been amended to recite a specific number of independent openings instead of "approximately 8" to cure the asserted deficiency

identified by the Examiner. For instance, claim 18 has been amended to recite 8 rectangular openings and claim 25 has been amended to recite "a number of independent rectangular openings ranging from 4 to 12." Accordingly, Applicants respectfully submit that claims 18 and 25 should be allowed. Moreover, claims 26-28, which depend from independent claim 25, do not specifically recite "approximately 8," but were rejected under this section because they depend from claim 25. Because claim 25 has been amended to overcome the asserted deficiency, Applicants respectfully submit that these claims are allowable as well.

Claims 1, 2, 6, 7, 13 and 14 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 917,545 to Collier ("Collier") or alternatively by U.S. Patent No. 668,292 to Johnston ("Johnston"). In the Office Action, the Examiner asserts:

Collier (note esp. openings b and c) and Johnston (note esp. rectangular opening illustrated in fig. 4) each disclose non-pneumatic tires including a toroidal tube with openings in its inner circumferential surface and a solid fill in the hollow chamber of the tube as required by claim 1.

(Office Action, p. 4).

Collier discloses a method of filling a hollow elastic tire with a spongy material and includes a tire (a) having an inlet aperture (b) and an outlet aperture (c). A pair of pistons (d, d) are positioned in the tire (a) so as to be on opposed sides of the inlet aperture (b). A filling material (e) is inserted into inlet aperture (b) and moves pistons (d,d) to force fluid in the tire out of outlet aperture (c).

Independent claim 1 has been amended to more clearly define the invention of claim 1 over Collier. In particular, claim 1 has been amended to recite

"each of the openings is adapted to receive the solid fill composition so as to fill the hollow chamber of the tube." This does not require that each opening actually receive the solid fill composition but that each opening is capable of receiving the solid fill material. Collier fails to teach or suggest that each of the apertures (b) and (c) are configured to receive the filling material (e). Instead, Collier specifically teaches that the outlet aperture (c) provides for removal of fluid in the tire (a) as the tire is being filled. Moreover, due to the pistons (d, d), the method of filling the tire (a) would be inoperable for its intended purpose if filling material (e) were also introduced through outlet aperture (c) so as to fill the tire (a). Accordingly, Applicants respectfully submit that amended claim 1 recites a combination of elements not taught or suggested by Collier and the claim is allowable.

Moreover, as claims 2, 6, 7, 13 and 14 depend from allowable independent claim 1, and further as each of these claims recites a combination of elements not taught or suggested in Collier, Applicants respectfully submit that these claims are allowable as well.

Johnston discloses a vehicle tire having a rim (C) and an outer rubber tube (B) mounted thereon. The tube (B) is filled with filling (A), which are segmented pieces of material that are carried by a binding rod (F). The filling (A) and binding rod (F) are positioned in the tube (B) and the tube laced together along the inner surface, as shown in Fig. 4 of Johnston. The rim (C) has perforations (c, x) and tube (B) has corresponding perforations (z, c') for passage of connecting stud (E) and connecting rod

(D). The connecting stud (E) and connecting rod (D) exert tension on the binding rod (F) to maintain the filling (A) firmly in place.

Independent claim 1 has also been amended so as to more clearly define over Johnston. As noted above, claim 1 has been amended to recite "each of the openings is adapted to receive the solid fill composition so as to fill the hollow chamber of the tube." In the Office Action, the Examiner points to Fig. 4 of Johnston to identify the openings in the tube (B). As noted above, these openings are (z) and (c'). Also noted above, these openings (z, c') are in the tube (B) so as to permit passage of the connecting stud and rod (E, D) so as to tighten the binding rod (F). The openings (z, c') are not configured to receive the filling (A). Instead, Johnston specifically teaches that the filling (A) is inserted through a seam in the tube (B) and the seam laced together to close the tube (B). Due to the segmented nature of the filling (A) and the rigid binding rod (F), these could not be received through the openings (z, c'). Accordingly, Applicants respectfully submit that claim 1 recites a combination of elements not taught or suggested by Johnston and the claim is allowable.

Moreover, as claims 2, 6, 7, 13 and 14 depend from allowable independent claim 1, and further as each of these claims recites a combination of elements not taught or suggested by Johnston, Applicants respectfully submit that these claims are allowable as well.

Claims 1, 6, 7 and 11-14 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 1, 503,432 to Schragin ("Schragin"). In the Office Action, the Examiner asserts:

Schragin discloses a non-pneumatic tire including a toroidal tube ("d" or "d+s") with openings (a') in its inner circumferential surface and a solid fill material within the hollow chamber of the tube as required by claim 1.

(Office Action, p. 5).

Schragin discloses a method of manufacturing a self-cooling tire including a metal ring (a) having spaced apart apertures (a'), solid rubber pieces (b) spaced part and coupled to ring (a), and shaping bodies (c) between the rubber pieces and also coupled to ring (a). The shaping bodies (c) overlie the apertures (a') in the metal ring (a). The rubber pieces (b) and shaping bodies (c) fill up the circumference of the ring (a). The rubber pieces and shaping bodies (c) include grooves (b', c³) respectively that connect the spaced rubber pieces (b) and are filled with ledge members (m). The shaping bodies (c) also include projections (k). These components are wrapped in a textile strip (d) and then an outer cover (S) and the assembly vulcanized. After vulcanization, the strip (d) is cut so as to access apertures (a'). The shaping bodies (c) and ledge members (m) are then removed from the tire via apertures (a') to form chambers (i) that each communicate with each other so as to enhance cooling of the tire.

Independent claim 1 has been amended so as to more clearly define over Schragin. As noted above, claim 1 has been amended to recite "each of the openings is adapted to receive the solid fill composition so as to fill the hollow chamber of the

tube." In the Office Action, the Examiner identifies the openings as (a'). As noted above, these openings (a') are in the metal plate (a) so as to permit the removal of the shaping bodies (c) from the tires in order to form the chambers (i). The openings (a') are not configured to receive the rubber pieces (b). Instead, Schragin specifically teaches that the rubber pieces (b) are located in the tire as the tire is constructed, i.e., the rubber pieces are wrapped with the strip (d) and outer cover (S) and then vulcanized to form the tire. The rubber pieces (b) could not be positioned inside the tire by insertion through the apertures (a'). Accordingly, Applicants respectfully submit that claim 1 recites a combination of elements not taught or suggested by Schragin and the claim is allowable.

Moreover, as claims 6, 7 and 11-14 depend from allowable independent claim 1, and further as each of these claims recites a combination of elements not taught or suggested by Schragin, Applicants respectfully submit that these claims are allowable as well.

Claims 1-3, 6, 7, 9 and 12-14 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,646,983 to Van Lieshoud ("Van Lieshoud"). In the Office Action, the Examiner asserts:

Van Lieshoud discloses a non-pneumatic tire including a toroidal tube filled with a solid fill (e.g. figs 2 and 5). Further, the tire would include openings in its inner circumference where the spokes penetrate the toroidal tube as required by claim 1.

(Office Action, p. 5).

Van Lieshoud discloses a wheel having a hub (1), spokes (2), and a tire (3). The spokes (2) have small plates (4) at an end opposite the hub (1) that are

embedded in the tire (3). The tire may include a cellular core (7) and a solid tread (8). The hub (1) and spokes (2) are placed in a mold having openings that allow the spokes to pass therethrough and being sealed by a sealing member. A rubber or other synthetic material is introduced into the mold so as to envelope the plates (4) and outer portion of the spokes (2).

Independent claim 1 has been amended so as to more clearly define over Van Lieshoud. As noted above, claim 1 has been amended to recite "each of the openings is adapted to receive the solid fill composition so as to fill the hollow chamber of the tube." In the Office Action, the Examiner identifies the openings as the location where the spokes (2) extend through the tire (3). As noted above, and generally admitted by the Examiner, these openings are to accommodate the passage of the spokes (2) into the tire (3). The material that forms the tire in the molding process is not introduced through these openings as the openings are "filled" with the spokes (2). Accordingly, Applicants respectfully submit that claim 1 recites a combination of elements not taught or suggested by Van Lieshoud and the claim is allowable.

Moreover, as claims 2, 3, 6, 7, 9 and 12-14 depend from allowable independent claim 1, and further as each of these claims recites a combination of elements not taught or suggested by Van Lieshoud, Applicants respectfully submit that these claims are allowable as well.

Claims 1-3, 6-8 and 12-14 stand rejected under 35 U.S.C. 102(b) as being anticipated by GB 2,047,637 to Riddoch et al. ("Riddoch"). In the Office Action, the Examiner asserts:

GB '037 discloses a non-pneumatic tire including a toroidal tube (5) filled

with a solid fill (4). Further, the tire would include openings in its inner circumference where the spokes penetrate the toroidal tube as required by claim 1.

(Office Action, p. 6).

Riddoch discloses a wheel with a molded tire and includes a rim (1) with a well (2), spokes (3) have an adjusting collar (6), and a solid foam core (4) wrapped around the rim (1) and seated in the well (2). A tire cover (5) is molded around the core (4) using a mold with mold halves (7, 7a). To make the tire, the rim (1), spokes (3) and core (4) are positioned in the mold and the mold closed. A molding composition is introduced into the mold through an inlet that is provided but not shown in the drawings. The liquid composition forms the elastomeric skin upon curing.

Independent claim 1 has also been amended so as to more clearly define over Riddoch. As noted above, claim 1 has been amended to recite "each of the openings is adapted to receive the solid fill composition so as to fill the hollow chamber of the tube." In the Office Action, the Examiner identifies the openings as the location where the spokes (3) extend through the tire cover (5). As noted above, and generally admitted by the Examiner, these openings are to accommodate the passage of the spokes (3). The material that forms the tire cover (5) in the molding process is not introduced through these openings as the openings contain the spokes (3). Riddoch discloses that the molding material is introduced into the mold in a manner not shown. Thus, a separate channel in the mold is used to introduce the molding material into the mold. Accordingly, Applicants respectfully submit that claim 1 recites a combination of elements not taught or suggested by Riddoch and the claim is allowable.

Moreover, as claims 2, 3, 6-8 and 12-14 depend from allowable independent claim 1, and further as each of these claims recites a combination of elements not taught or suggested by Riddoch, Applicants respectfully submit that these claims are allowable as well.

Claims 4, 5, 15-17 and 19-24 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Van Lieshoud in view of U.S. Patent No. 2,709,471 to Smith et al. ("Smith"). Claims 4 and 5 depend from allowable independent claim 1 and further as Smith fails to cure the deficiency in Van Lieshoud as provided above in regard to claim 1, Applicants respectfully submit that claims 4 and 5 are allowable.

Independent claim 15 has been amended to more clearly define the invention of claim 15 over the prior art of record. In particular, claim 15 has been amended in a manner similar to claim 1 and therefore recites "each of the openings is adapted to receive the solid fill composition so as to fill the hollow chamber of the tube." For the reasons provided above in regard to claim 1, Van Lieshoud fails to teach or suggest that combination of elements recited in claim 15, and Smith fails to cure the deficiency of Van Lieshoud. Accordingly, Applicants respectfully submit that claim 15 recites a combination of elements not taught or suggested by Van Lieshoud, alone or in combination with Smith, and the claim is allowable.

Moreover, as claims 16, 17 and 19-24 depend from allowable independent claim 15, and further as each of these claims recites a combination of elements not taught or suggested by Van Lieshoud, alone or in combination with Smith, Applicants respectfully submit that these claims are allowable as well.

Claims 8 and 10 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Van Lieshoud (US 3,646,983). Claims 8 and 10 depend from allowable independent claim 1 and thus are allowable for at least the reasons provided above for claim 1.

Conclusion

In view of the foregoing response including the amendments and remarks, this application is submitted to be in complete condition for allowance and early notice to this affect is earnestly solicited. If the Examiner believes any matter requires further discussion, the Examiner is respectfully invited to telephone the undersigned attorney so that the matter may be promptly resolved.

Applicant does not believe that any fees are due in connection with this response other than the fee for a one-month extension. However, if such petition is due or any fees are necessary, the Commissioner may consider this to be a request for such and charge any necessary fees to deposit account 23-3000.

Respectfully submitted,

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